



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,188	03/12/2004	Brian J. Kirby	SD-8398.1 DIV	8182
20567	7590	09/12/2007	EXAMINER	
SANDIA CORPORATION			NOGUEROLA, ALEXANDER STEPHAN	
P O BOX 5800			ART UNIT	
MS-0161			PAPER NUMBER	
ALBUQUERQUE, NM 87185-0161			1753	
			MAIL DATE	DELIVERY MODE
			09/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/799,188	Applicant(s) KIRBY, BRIAN J.	
	Examiner. ALEX NOGUEROLA	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on pre.-amndt. of 3/12/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 15-18, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nikiforov et al. WO 98/45929 A1 ("Nikiforov").

Addressing claims 15, 17, 18, 20, and 21, Nikiforov discloses an electrolyte comprising: a fluid having a chemical compound dissolved therein (see page 12, lines 04-15; page 12, lines 24-28; and claim 6 – note especially dimethylethylaminopropane sulfonic acid and dimethylbenzylaminopropane sulfonic acid), wherein the chemical compound is substantially charge neutral and has a dipole moment (Applicant himself acknowledges that zwitterions are substantially charge neutral and have a dipole moment – see page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds. Also see in Nikiforov page 09, lines 30-31,

Art Unit: 1753

which notes that zwitterions are dipolar molecules), and wherein the chemical compound produce a positive dielectric increment in the electrolyte (Applicant has acknowledged that trialkyl ammonium alkane sulfonates have a large positive dielectric increment in water. See page 12, lines 03-15 in Applicant's specification, which is only cited to show a property of a class of compounds. Thus, since dimethylbenzylaminopropane sulfonic acid is a trialkyl ammonium alkane sulfonate it would be expected to have large dielectric increment in water. As for dimethylbenzylaminopropane sulfonic acid since it is structurally similar to a trialkyl ammonium alkane sulfonate (it is a dialkylbenzyl ammonium alkane sulfonate) it would also be expected to have significant dielectric increment)). Nikiforov does not mention that the chemical compound is for an electrokinetic's pump; however, this is only an intended use for which the disclosed chemical compounds (dimethylethylaminopropane sulfonic acid and dimethylbenzylaminopropane sulfonic acid) are capable since they are intended to be used to enhance fluid transport by electroosmotic flow. See the abstract.

For claim 20, note that although water is not mentioned in Nikiforov one with ordinary skill in the art at the time of the invention would assume that any electrokinetic process, especially electrophoresis and/or electroosmosis, is being performed using an aqueous solution unless otherwise specified.

Addressing claim 16, for the additional limitation of this claim note that Applicant acknowledges that "[z]witterions ... generally exhibit a large inherent dipole moment

(≈ 20-25 D) ...". See page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds.

3. Claims 15-18, 20, 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. US 5,366,601 ("Jones")

Addressing claims 15, 17, 18, 20, 21, Jones discloses an electrolyte comprising: a fluid having a chemical compound dissolved therein (col. 05:25-31 and col. 05:68 – col. 06:03 – note 3,N,N-dimethylpalmitylammonia propanesulfonate), wherein the chemical compound is substantially charge neutral and has a dipole moment (Applicant himself acknowledges that zwitterions are substantially charge neutral and have a dipole moment – see page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds. Also see in Jones col. 05:68 – col. 06:03, which notes that 3,N,N-dimethylpalmitylammonia propanesulfonate is amphoteric), and wherein the chemical compound produce a positive dielectric increment in the electrolyte (Applicant has acknowledged that trialkyl ammonium alkane sulfonates have a large positive dielectric increment in water. See page 12, lines 03-15 in Applicant's specification, which is only cited to show a property of a class of compounds. Thus, since dimethylpalmitylammonia propanesulfonate is a trialkyl ammonium alkane sulfonate it would be expected to have large dielectric increment in water.). Jones does not mention that the chemical compound is for an electrokinetic's

pump; however, this is only an intended use for which the disclosed chemical compound (dimethylpalmitylammonia propanesulfonate) are capable since they are intended to be used to enhance fluid transport by electroosmotic flow. See the abstract.

For claim 20, note water and water-containing samples disclosed in col. 07:58-65. Moreover, one with ordinary skill in the art at the time of the invention would assume that any electrokinetic process, especially electrophoresis and/or electroosmosis, is being performed using an aqueous solution unless otherwise specified.

Addressing claim 16, for the additional limitation of this claim note that Applicant acknowledges that “[z]witterions ... generally exhibit a large inherent dipole moment ($\approx 20\text{-}25\text{ D}$) ...”. See page 11, lines 16-21 in Applicant’s specification, which is only cited to show a property of a class of compounds.

4. Claims 15-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Petersen et al. US 5,192,405 (“Petersen”)

Addressing claims 15 and 17-21 Petersen discloses an electrolyte comprising: a fluid having a chemical compound dissolved therein (abstract; col. 03:35-46; and col.

Art Unit: 1753

03:63 - 04:30-39 – note especially Formula I and the preferred formulas, such as $\text{Me}_3\text{N}(\text{CH}_2)_3\text{SO}_3$, $n\text{-Pr}_3\text{N}(\text{CH}_2)_3\text{SO}_3$, for example), wherein the chemical compound is substantially charge neutral and has a dipole moment (Applicant himself acknowledges that zwitterions are substantially charge neutral and have a dipole moment – see page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds.), and wherein the chemical compound produce a positive dielectric increment in the electrolyte (Applicant has acknowledged that trialkyl ammonium alkane sulfonates have a large positive dielectric increment in water. See page 12, lines 03-15 in Applicant's specification, which is only cited to show a property of a class of compounds. Thus, since Petersen discloses trialkyl ammonium alkane sulfonates it would be expected to have large dielectric increment in water.). Jones does not mention that the chemical compound is for an electrokinetic's pump; however, this is only an intended use for which the disclosed chemical compound (trialkyl ammonium alkane sulfonates) are capable since they are intended to be used in a capillary electrophoresis process in which EOF (electroosmotic flow) is to be maintained. See col. 02:49-66.

For claim 20, note that one with ordinary skill in the art at the time of the invention would assume that any electrokinetic process, especially electrophoresis and/or electroosmosis, is being performed using an aqueous solution unless otherwise specified.

Addressing claim 16, for the additional limitation of this claim note that Applicant acknowledges that “[z]witterions ... generally exhibit a large inherent dipole moment (\approx 20-25 D) ...”. See page 11, lines 16-21 in Applicant’s specification, which is only cited to show a property of a class of compounds.

Claim Rejections - 35 USC § 103

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nikiforov et al. WO 98/45929 A1 (“Nikiforov”).

Nikiforov discloses an electrolyte comprising: a fluid having a chemical compound dissolved therein (see page 12, lines 04-15; page 12, lines 24-28; and claim 6 – note especially dimethylethylaminopropane sulfonic acid and dimethylbenzylaminopropane sulfonic acid), wherein the chemical compound is

substantially charge neutral and has a dipole moment (Applicant himself acknowledges that zwitterions are substantially charge neutral and have a dipole moment – see page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds. Also see in Nikiforov page 09, lines 30-31, which notes that zwitterions are dipolar molecules), and wherein the chemical compound produce a positive dielectric increment in the electrolyte (Applicant has acknowledged that trialkyl ammonium alkane sulfonates have a large positive dielectric increment in water. See page 12, lines 03-15 in Applicant's specification, which is only cited to show a property of a class of compounds. Thus, since dimethylbenzylaminopropane sulfonic acid is a trialkyl ammonium alkane sulfonate it would be expected to have large dielectric increment in water. As for dimethylbenzylaminopropane sulfonic acid since it is structurally similar to a trialkyl ammonium alkane sulfonate (it is a dialkylbenzyl ammonium alkane sulfonate) it would also be expected to have significant dielectric increment)). Nikiforov does not mention that the chemical compound is for an electrokinetic's pump; however, this is only an intended use for which the disclosed chemical compounds (dimethylethylaminopropane sulfonic acid and dimethylbenzylaminopropane sulfonic acid) are capable since they are intended to be used to enhance fluid transport by electroosmotic flow. See the abstract.

Nikiforov does not mention trimethyl ammonium propane sulfonate; however, Nikiforov does disclose dimethylethylaminopropane sulfonic acid, which is structurally similar to trimethyl ammonium propane sulfonate and which is used for a similar purpose as stated in Applicant's claim preamble. Since "[a] *prima facie* case of

obviousness may be made when chemical compounds have very close structural similarities and similar utilities (MPEP 2144.09) trimethyl ammonium propane sulfonate is *prima facie* obvious over dimethylethylaminopropane sulfonic acid.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. US 5,366,601 ("Jones")

Jones discloses an electrolyte comprising: a fluid having a chemical compound dissolved therein (col. 05:25-31 and col. 05:68 – col. 06:03 – note 3,N,N-dimethylpalmitylammonia propanesulfonate), wherein the chemical compound is substantially charge neutral and has a dipole moment (Applicant himself acknowledges that zwitterions are substantially charge neutral and have a dipole moment – see page 11, lines 16-21 in Applicant's specification, which is only cited to show a property of a class of compounds. Also see in Jones col. 05:68 – col. 06:03, which notes that 3,N,N-dimethylpalmitylammonia propanesulfonate is amphoteric), and wherein the chemical compound produce a positive dielectric increment in the electrolyte (Applicant has acknowledged that trialkyl ammonium alkane sulfonates have a large positive dielectric increment in water. See page 12, lines 03-15 in Applicant's specification, which is only cited to show a property of a class of compounds. Thus, since dimethylpalmitylammonia propanesulfonate is a trialkyl ammonium alkane sulfonate it would be expected to have large dielectric increment in water.). Jones does not

mention that the chemical compound is for an electrokinetic's pump; however, this is only an intended use for which the disclosed chemical compound (dimethylpalmitylammonia propanesulfonate) are capable since they are intended to be used to enhance fluid transport by electroosmotic flow. See the abstract.

Jones does not mention trimethyl ammonium propane sulfonate; however, Nikiforov does disclose dimethylpalmitylammonia propanesulfonate, which is structurally similar to trimethyl ammonium propane sulfonate and which is used or could be used for a similar purpose as stated in Applicant's claim preamble. Since "[a] *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities (MPEP 2144.09) trimethyl ammonium propane sulfonate is *prima facie* obvious over dimethylpalmitylammonia propanesulfonate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alex Noguera
Primary Examiner

AU 1753

September 6, 2007